



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/520,406	01/06/2005	Mitsuaki Iwashita	KKH-0034	5490
23353 7590 08/21/2008 RADER FISHMAN & GRAUER PLLC LION BUILDING 1233 20TH STREET N.W., SUITE 501 WASHINGTON, DC 20036				
EXAMINER MACARTHUR, SYLVIA				
ART UNIT		PAPER NUMBER		
1792				
MAIL DATE		DELIVERY MODE		
08/21/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/520,406

**Applicant(s)**

IWASHITA ET AL.

**Examiner**

Sylvia R. MacArthur

**Art Unit**

1792

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 April 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 4, 6, 8, 10-13 and 17-20 is/are pending in the application.
- 4a) Of the above claim(s) 21-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 4, 6, 8, 10-13 and 17-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Status of the claims***

1. The status identifier of claims 21-24 should be corrected so as to reflect that those claims are withdrawn.

### ***Response to Arguments***

2. Applicant's arguments with respect to claims 1, 4, 6, 8, 10-13, and 17-20 have been considered but are moot in view of the new ground(s) of rejection. The amendment to claim 1 wherein the plasma supply part is attached to a portion facing the predetermined portion of the wafer and a suction port being provided outside of the plasma supply port and having a controlling part for controlling a suction pressure of the said suction part has necessitated the introduction of the prior art of Sada et al (JP 11-160891).

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 4, 6, 8, 10- 13 and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sada et al (JP 11-160891) as modified by Yanagisawa (US 6,406,589) and Sato (US 5,993,547).

Regarding claims 1, 6, 13: Sada et al teaches a thin film removing device comprising a film removing member (3a-3d), see Figs. Sada et al illustrates film removing member (see Figs. especially Figs. 1 and 4) having a shape which is composed of a vertical part, an upper part

formed in a horizontal direction from an upper end part of the vertical part, and a lower part formed in a same direction as the horizontal direction from a lower end part of the vertical part, being formed so that the outer peripheral part of the substrate is allowed to be inserted into an opening which is formed by the upper part and the lower part, and a suction port see Fig. 13 for sucking an atmosphere in a vicinity of the predetermined portion from outside the substrate. Note nozzles 51 (located on the ceiling surface inside the film removing member and attached as recited by the claimed invention) and 52 are provided as treatment fluid supply nozzles.

Sada et al fails to teach a) a plasma supply part and b) a rotating mechanism and c) controlling part

Yanagisawa teaches the use of plasma via a plasma generation means 11 to remove a film from the edge of a wafer. Table 3 of Yanagisawa holds and rotates the wafer. See also col.4 lines 7-30

The motivation to modify the apparatus of Sada et al to treat the substrate using plasma rather than the solvent is that plasma treatment of substrates is a known alternative to wet etching as it is often faster and more environmentally friendly, see col. 2 lines 1-61. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to modify the apparatus of Sada et al to use plasma treatment instead wet and to rotate the wafer via a rotating mechanism as Yanagisawa teaches.

The apparatus resulting from the modification of Sada et al and Yanagisawa fails to teach a suction controlling part.

Sato teaches an edge rinse mechanism with a chuck 3a that rotates using rotating motor 3c. The motivation to rotate the wafer is that rotation is known in the art to enhance the speed

and uniformity of treatment. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to rotate the substrate.

Sato further provides a suction controlling part (controller 8c), see Figures and col.4 lines 1-8. The motivation to provide a suction controlling part in the apparatus of Sada et al as modified by Yanagisawa is that the controller unit allows for the amount of suction to be reproducible and enhances process control.

Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to modify the apparatus of Sada et al to and Yanagisawa to use a suction controlling part such as the controller 8c of Sato.

Regarding claim 4: The processing apparatus as set forth in claim 1, wherein said suction port is provided inside said film removing member and at a position facing the opening, see Figures of Sada et al.

Regarding claim 8: See Fig. 1 of Sada et al as the members do move horizontally. The driving part is unshown. Also Sato teaches the horizontal movement of resist agent 6 with element B see Fig. 3 and col. 5 lines 10-35. The motivation to allow for the displacement of the nozzle is that it allows for better control of the treatment location.

Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to allow for movement of the treatment nozzle, see Fig.4 of Sato.

Regarding claims 10 and 11: The processing apparatus as set forth in claim 1, wherein said plasma supply parts are provided at plural positions along the substrate in said film

removing member. See Sada et al teaches a plurality of treatment supply nozzles and Sato teaches a plurality of gas supply nozzles.

Regarding claim 17. See Sada et al provides a plurality of nozzles the intended use of those nozzles does not structurally differentiate them.

Regarding claims 18 and 19: These claims are interpreted as matter of an intended use and do not structurally limit the prior art.

5. Claims 12 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sada et al (JP 11-160891) as modified by Yanagisawa (US 6,406,589) and Sato (US 5,993,547) as applied to claims 1, 4, 6, 8, 10- 13 and 17-20 above and in further view of Sadohara et al (US 2001/0032705).

The teachings of Sada et al (JP 11-160891) as modified by Yanagisawa (US 6,406,589) and Sato (US 5,993,547) were discussed above.

Regarding claim 12: The modification of Sada et al (JP 11-160891) as modified by Yanagisawa (US 6,406,589) and Sato (US 5,993,547) fails to teach the processing apparatus as set forth in claim 1, wherein said plasma supply part is an emitting part of a ray for converting the reactive gas into the plasma. The abstract of Sadohara et al teaches plasma generator 1 to form a reactive gas using a microwave generator M. Note that Yanagisawa also teaches a plasma generator in the form of microwaves see col.4 lines 25-30. The use of rays is an alternative means of generating plasma. Such as using UV rays see [105] of Sadohara et al. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to

modify the apparatus of Sada et al (JP 11-160891) as modified by Yanagisawa (US 6,406,589) and Sato (US 5,993,547) with a suggestion to use alternative plasma generating means.

Regarding claim 20: The modification further fails to teach the processing apparatus as set forth in claim 1, further comprising: a heating unit for heating the substrate by an infrared ray.

Sadohara et al teaches a local etching wherein a substrate is heated using IR see paragraph [0016] and [0021]. Sadohara et al teaches that it is conventional to heat the substrate during treatment in order to ensure that it remains at optimal temperature. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to modify the apparatus of Sada et al (JP 11-160891) as modified by Yanagisawa (US 6,406,589) and Sato (US 5,993,547) as modified with the IR heater of Sadohara et al.

### ***Conclusion***

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sylvia R. MacArthur whose telephone number is 571-272-1438. The examiner can normally be reached on M-The during the hours of 8 a.m. and 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

August 13, 2008

/Sylvia R MacArthur/  
Primary Examiner, Art Unit 1792